Berkoff, Michael

From: McKernan, John
Sent: Tuesday, October 20, 2015 3:08 PM
To: Berkoff, Michael
Cc: Gervais, Gregory; Acheson, Carolyn
Subject: FW: Allied Landfill - Biotech Restorations?

US EPA RECORDS CENTER REGION 5
577931

Hi Michael-

Dr. Carolyn Acheson, one of our ORD specialist on bioremediation, had a few constructive comments. I've included them below.

"There seem to be a couple of items so addressing them sequentially.

Biopath Solutions – Different from Biotech Restorations. The names and the technologies sound similar, but the people are different. I could not find any data on the Biopath Solutions website demonstrating their technology's performance for any contaminant. They did make claims but did not provide supporting data.

Regarding the overall talking points, comments are in black after each one:

1. This technology was considered in EPA's evaluation of technologies – I am not aware of an EPA evaluation of Biopath Solutions.
2. This technology is not a good fit at Allied due to the nature of the waste at Allied – The technology is not a good fit because the vendor does not provide data to demonstrate performance.
    a. PCBs are very tightly bound and not readily available for treatment
    b. This technology, even if it has some effect, may just not get very close to 0 - The vendor does not provide data to demonstrate technology performance for the contaminants at this site. Final concentrations are unknown.
3. This technology may require multiple applications and that may take a great deal of time. - The vendor does not provide data to demonstrate technology performance for the contaminants at this site.
4. This technology requires thoroughly stirring up the contaminated residuals and would pose a heightened risk of contaminated materials - The technology description is very cursory. We cannot tell what risks are posed by this technology.

Regarding **Biotech Restorations** – Suggest the following changes to the talking points additions are underlined, deletions in strike through, comments in ( )

1. This technology was considered in EPA's evaluation of technologies. <u>The technology has also been evaluated by ORD and found to lack demonstrated performance.</u>
2. This technology is not a good fit at Allied due to the nature of the waste at Allied
    a. ~~PCBs are very tightly bound and not readily available for treatment .~~ <u>The vendor does not provide data to demonstrate that the technology can treat PCBs.</u>
    b. This technology, even if it has some effect, ~~may just not get very close to 0~~ <u>has not demonstrated PCB removal to the needed clean up level</u>.
3. This technology may require multiple applications and that may take a great deal of time.
4. This technology requires thoroughly stirring up the contaminated residuals and would pose a heightened risk of contaminated materials. <u>The vendor's claims of removal may be due to volatilization during stirring activities and dilution with treatment amendments.</u>

The Meggo 2013 paper was interesting. In my opinion, a thorough discussion of a study to evaluate PCB treatment involving plants. However, the paper did not show that the technology could meet clean up goals. It is possible that a

suitable technology could be developed at some point based on this type of technology, but the current state is not ready for field application. Some strengths of this paper were: inclusion of "no treatment" controls and replicate treatments; evaluation of performance using mole balances; evaluation of mixtures and individual PCBs; fairly thorough description of amendments and chemical analysis; discussion of transformation products; use of statistics in evaluating treatment performance; and finally, discussion of results was scientifically reasonable, based on the data available. The treatments were shown to support some transformation of the original PCBs to degradation products. Unfortunately, the total PCB concentration did not change as a result of treatment. No mineralization was observed."

I hope this is helpful. Please feel free to contact me or Dr. Acheson with any questions or comments.

Thank you,

John

From: Berkoff, Michael
Sent: Monday, October 19, 2015 11:29 AM
To: McKernan, John >; Gervais, Gregory <Gervais.Gregory@epa.gov>
Subject: RE: Allied Landfill - Biotech Restorations?

John and Greg,

How are you guys? The proposed plan for Allied Landfill is out and things are going well, so far. Thank you again for your part in getting us there. Some folks are talking up technology from the firm Biopath Solutions. I think that it is the same folks that you reference in your email. I just want to check back in on my talking points on this.

1. This technology was considered in EPA's evaluation of technologies
2. This technology is not a good fit at Allied due to the nature of the waste at Allied
    a. PCBs are very tightly bound and not readily available for treatment
    b. This technology, even if it has some effect, may just not get very close to 0
3. This technology may require multiple applications and that may take a great deal of time.
4. This technology requires thoroughly stirring up the contaminated residuals and would pose a heightened risk of contaminated materials

Can you add to or refine my list of points?

Here are links to the company page and an article that the citizen sent too:

http://biopathsolutions.com/

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4294558/

Thanks for your help on this guys,
Michael

From: McKernan, John
Sent: Tuesday, March 17, 2015 9:51 AM
To: Berkoff, Michael; Gervais, Gregory
Subject: RE: Allied Landfill - Biotech Restorations?

Hi Michael-

it's not posted to the EPA website, and therefore not public. If it is shared with your contractors, please ask that they keep it internal.

Thanks,

John

From: Berkoff, Michael
Sent: Tuesday, March 17, 2015 10:48 AM
To: McKernan, John; Gervais, Gregory
Subject: RE: Allied Landfill - Biotech Restorations?

Can I share this?

From: McKernan, John
Sent: Tuesday, March 17, 2015 9:39 AM
To: Berkoff, Michael; Gervais, Gregory
Subject: RE: Allied Landfill - Biotech Restorations?

Hi Michael-

For your consideration. We conducted this thorough review of Biotech Restoration claims based on a request from Linda Fiedler in OSRTI.

Please feel free to contact me with any questions.

Thank you,

John

From: Berkoff, Michael
Sent: Tuesday, March 17, 2015 10:34 AM
To: Gervais, Gregory; McKernan, John
Cc: Jeff Keiser; Beth Rohde
Subject: Allied Landfill - Biotech Restorations?

Greg and John,
I am guessing that you guys might know a thing or two about this Company Biotech Restorations. They claim to have successfully broken down PCBs at a couple Superfund Sites in very short time frames. I cannot readily find information on the site or more specifically the nature of the waste that they treated. Have you guys? Here is the link to their site: www.biotechrestorations.com
Their work came up at a public meeting. Before I say that we already looked at this stuff, I want to make sure it's the same (and has the same issues as) the bioremediation that we already looked at.
Thanks,
Michael

From: Bruce Merchant [mailto:bemerchant@gmail.com]
Sent: Monday, March 16, 2015 11:00 AM
To: Berkoff, Michael; Bucholtz, Paul (DEQ)
Cc: Hatton, Marc
Subject: Biotech Restorations

Good Morning Michael and Paul -

I've been able to do a bit of research on the biotechnology concept that was brought up at the February 26, 2015 public meeting.

The company that has the process for doing the bioremediation on PCBS is called Biotech Restorations. It was started by at least one former Dow Chemical employee.

It is my understanding that the key process ingredient is a protein (not an enzyme, as I first thought.) Evidently, the protein activates existing enzymes to deal with the toxicity issue within the bacteria caused by the chlorine atoms found in PCBs. The process involves a great deal of agressive material handling (i.e., turning the windrowed piles every 48 hours) to ensure adequate contact between the bacterial, protein, and PCB waste material. The claim is that degradation to acceptable levels occurs within 12 weeks.

I have also heard (not gleaned from their website - www.biotechrestorations.com) that this technology has been approved by EPA Regions 4 and 9. They site four PCB studies on their website. They are:

- Swenson PCB Site (Aroclor 1254) - Field Scale
- Tyndall Air Force Base - Bench Study
- Amtrak PCB Site - Bench Study
- Housatonic River (Aroclor 1260) - Bench Study.

Not sure of any of these locations, however.

Thought I'd provide the background information I have. I'm still digging on this myself.

Hope this helps. Maybe we could take 10 miniutes or so to discuss this next Tuesday, March 24 in St. Joe?

Thanks.

Bruce